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INFORMATION CIRCULAR NO. 5

CLAY PRODUCTS INDUSTRY IN ILLINOIS IN 1932

PRELIMINARY REPORT

By W. H. Voskuil

April, 1933

Department of Industrial Engineering
University of Illinois at Urbana-Champaign
1910



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Illinois State Geological Survey
Urbana, Illinois

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CLAY PRODUCTS INDUSTRY IN ILLINOIS IN 1932

Preliminary Report

By W. H. Voskuil

Preliminary returns from manufacturers of clay products in Illinois in 1932, indicate a value of output of approximately \$4,000,000. Returns that probably represent about 95 per cent of the production, and included in this preliminary report, give a value of \$3,937,951.24. This is a severe drop from the 1931 value of \$10,585,136 and is about one-tenth of the 1926 value. The lack of demand for clay products is of course directly related to conditions in the building industry. The record of building permits in two of the important markets for Illinois clay products and their relation to the demand for structural clay materials is shown in Table 1.

Table 1. Value of Building Permits in Chicago and St. Louis and value of clay products in Illinois, 1920-1932
(In thousands of dollars)

Year	Value of building permits Chicago	St. Louis	Value of clay products in Illinois
1920	\$76,173	\$17,694	\$26,138
1921	125,005	16,631	19,041
1922	227,742	25,211	26,784
1923	329,604	41,444	34,219
1924	296,894	39,832	33,591
1925	360,804	54,877	36,764
1926	364,584	39,842	37,030
1927	352,936	42,075	34,347
1928	315,800	42,813	32,027
1929	202,287	27,331	27,391
1930	79,613	17,348	19,972
1931	44,030	16,620	10,584
1932	3,783	4,310	3,938

GRAIN PRODUCTION IN ILLINOIS IN 1920

Preliminary Report

By H. C. Towner

The following table shows the production of grain in Illinois in 1920, as compared with the total production of grain in the State in 1919. The total production of grain in Illinois in 1920 was 4,000,000 bushels, as compared with 3,800,000 bushels in 1919. The increase in production was 5.3%. The production of wheat was 2,500,000 bushels, as compared with 2,400,000 bushels in 1919. The increase in production was 4.2%. The production of corn was 1,500,000 bushels, as compared with 1,400,000 bushels in 1919. The increase in production was 7.1%. The production of oats was 500,000 bushels, as compared with 400,000 bushels in 1919. The increase in production was 25.0%. The production of barley was 500,000 bushels, as compared with 500,000 bushels in 1919. The production was the same. The production of rye was 500,000 bushels, as compared with 500,000 bushels in 1919. The production was the same. The production of sorghum was 500,000 bushels, as compared with 500,000 bushels in 1919. The production was the same. The production of millet was 500,000 bushels, as compared with 500,000 bushels in 1919. The production was the same. The production of buckwheat was 500,000 bushels, as compared with 500,000 bushels in 1919. The production was the same. The production of other grains was 500,000 bushels, as compared with 500,000 bushels in 1919. The production was the same.

Table 1. Value of Grain Produced in Illinois and of Total Value of Grain Produced in the United States in 1920

Year	Value of Grain Produced in Illinois (in millions of dollars)	Value of Total Grain Produced in the United States (in millions of dollars)
1920	100.00	100.00
1919	95.00	95.00
1918	90.00	90.00
1917	85.00	85.00
1916	80.00	80.00
1915	75.00	75.00
1914	70.00	70.00
1913	65.00	65.00
1912	60.00	60.00
1911	55.00	55.00
1910	50.00	50.00
1909	45.00	45.00
1908	40.00	40.00
1907	35.00	35.00
1906	30.00	30.00
1905	25.00	25.00
1904	20.00	20.00
1903	15.00	15.00
1902	10.00	10.00
1901	5.00	5.00
1900	0.00	0.00

The relation of construction to productive activity in other lines is indicated in a report of the National Bureau of Economic Research.* An analysis of the figures of production shows that products entering into "capital equipment" in 1932 totaled but 36 per cent that of 1927. "Consumption" goods may be divided into "durable", "semi-durable", and "non-durable." "Durable" goods produced in 1932 were 34 per cent of those produced in 1927, "semi-durable" were 75 per cent, and "non-durable" were 89 per cent. These figures illustrate the way in which the country has limited its purchases to commodities supplying the day-to-day needs and also the extreme elasticity in the demand for "durable" commodities.

"Construction" work may be split into three classes--residences, non-residential buildings, and public works. In 1932, building of residences was only 15 per cent, non-residential building was 25 per cent, and "public works" and utilities building was 52 per cent of the 1927 total. The extreme elasticity of demand for this class of product, as illustrated by these figures, has a great bearing upon the matter of employment. It is manifest that the remedy for unemployment--as distinguished from temporary relief--will depend upon the speed with which normal "construction" activities can be resumed.

Production of principal clay products in Illinois in 1932 is shown in Table 2.

Table 2. Production of Clay Products by Classes in 1932

Area	COMMON BRICK		
	Quantity (Thousands)	Value	Stocks on hand (Thousands)
Chicago area (Lake and Cook counties)	14,597	\$113,149	63,235
Northern Illinois (Bureau, Fulton, LaSalle, Livingston, and Tazewell counties)	7,357	65,701	7,856
Central and western Illinois (Henry, Sangamon, and Macon counties)	2,265	19,607	2,058
East St. Louis district (Madison, Macoupin, St. Clair, and Greene counties)	4,753	55,372	2,799
Eastern and Southern Illinois (Fayette, Iroquois, Saline, and Vermilion counties)	2,409	21,062	3,435
TOTAL	31,381	\$274,891	79,383

* National Bureau of Economic Research, Bull. 45.

Table 2 (continued)

OTHER PRODUCTS (Entire State)			Stocks December 31
	Quantity	Value	
Face brick, thousands	25,406	\$328,474.00	46,757
Hollow building tile, tons	36,649	116,502.31	50,580
Vitrified brick, thousands			
Paving	25,137	496,500.30	10,302
Other	5,689	62,868.96	7,993
Drain tile (tons)	18,533	83,147.65	123,190
Other clay products*		772,155.19	
Pottery		1,812,792.83	
	TOTAL	\$3,937,951.24	

* Fireclay products, terra cotta, refractory cement, raw clay, silica brick, cement, hollow brick, sewer pipe, wall coping, flue lining, chimney pipe, enameled brick, haydite, etc.

The present status of the clay products industry, especially that of structural clay products whose output has decreased most, must be examined in the light of statistics of production, shipments, and stocks of material on hand. For this purpose the data on production and stocks, gathered by the State Geological Survey, and the monthly shipments from a group of selected plants reporting to the U. S. Department of Commerce, are compared.° Thus in 1932, 47 plants produced 31,381,000 common bricks, and stocks on hand as of December 31, 1932, were 79,383,000. An average of 34 representative plants shipped a total of 56,452,000 common bricks, and stocks declined from 107,533,000 in December, 1931, to 69,778,000 at the end of December, 1932, (Table 3). Face brick inventories decreased only slightly, as indicated from the reports of 16 representative plants in December, 1931, and of 17 plants in December, 1932. Evidently more than a year's supply of finished materials is on hand at the existing rate of market demand but stocks would not be excessive if moderate building activity were resumed.

° Structural Clay Products: Monthly release from Bureau of the Census, Department of Commerce, Washington, D. C.

General Ledger		Particulars	
Account	Debit	Credit	Balance
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1001	1001		
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General Ledger Summary

The following is a summary of the General Ledger for the year 1917. The total debit amount is \$1,000,000 and the total credit amount is \$1,000,000. The balance is \$0.

General Ledger Summary

Table 3. Summary of Structural Clay Products Industry in 1932

	Common Brick (Thousands)	Face Brick (Thousands)	Hollow building tile (Tons)
Production	31,381 (47 plants)	25,406 (22 plants)	40,494 (28 producers)
Shipments, 1932	56,452 (34 producers)	32,633 (19 producers)	30,999 (16 producers)
Stocks, Dec. 31, 1931	107,533	41,866	73,053
Stocks, Dec. 31, 1932	69,778	40,028	45,282
Decrease	-37,755	-1,838	-27,771
Stocks as reported by all producers	78,778	45,182	50,580

Immediate problems of the structural clay
products industries

The problems of the brick industry from 1920 to 1926 were those of production. Building activities and the demand for structural clay products were expanding at a rapid rate. The building peak of 1926-27, however, was followed by a period of decline that shifted the problem from one of production to one of distribution and marketing. The immediate problem is the readjustment of production and stocks into closer coordination with actual market demand.

The figures of shipments and stocks for 1932, together with the general figures for clay products output and building activity from 1920 to 1932, may be regarded as a statistical barometer of the market condition and the relation of the producers to the market. Inventories need to be still further decreased if production is to be economical. The dollars-and-cents value of keeping inventories close to market demand may be illustrated as follows, using the 1932 figures of the 34 companies reporting on manufacture of common bricks:

If a price of \$8.00 per thousand at the yard is assumed, the stock on December 31, 1931 (107,533,000 bricks), was worth 107,533 x \$8 or \$860,264, the annual interest charge on which, at 6 per cent, would be \$51,616. A year later when stocks were reduced to 69,778,000 bricks, the value was \$558,224, a decrease of \$302,040, and the interest charges would be \$33,493 or a decrease of \$18,123 for the group of producers.

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Control of production for the purpose of maintaining inventories at a moderate level, however, requires a further refinement of statistical reports to cover separately each important marketing district, if a producer is to have an accurate picture of conditions of supply and demand in his particular locality. In Illinois, for example, certain more or less well defined market districts, such as the Chicago area, the St. Louis district, the Peoria market, the Springfield market, and the Danville market ought to have statistics of both shipments and production separately tabulated and reported.

For such districts as Chicago and St. Louis, where the market is supplied by several brick plants in adjoining states, it would be helpful if total statistics of production and shipments in the local market were collected by a local manufacturers' organization and the data made available to each of the members,

In the St. Louis district, for example, there were in/18 1929
clay products plants in St. Louis city and county and 13 in the counties comprising the St. Louis district in Illinois. To get a complete picture of the statistical position of the industry in this local market, total monthly production and inventory statistics of all plants should be available by cooperative agreement among the manufacturers in this area. By no other means can the costly policy of piling up inventories be curtailed and brought under control.

Future Problems of the Brick Industry

Apart from the immediate problem of inventory control, the structural clay products industries are facing certain changing conditions in the building industry which must be anticipated and carefully studied so that the proper readjustments can be made within the industry to meet the new outlook and the new needs.

Although an accurate or detailed forecast cannot be made, nevertheless certain trends are discernible and serve as guide posts to the characteristics of building activity in the coming decade. Among the items to be considered are:

- (1) Trends of construction in major classes of buildings, i.e., residential, public, industrial, office, etc.;
- (2) changes in building construction which will require new types of materials.
- (3) new materials needed to meet the modern demands for comfort and convenience in buildings, especially in residences.

The next decade will probably witness the greatest activity in the residential building class. The market for other classes of buildings such as office buildings, industrial plants, and public buildings is either saturated or in excess of needs for

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the present and immediate future. Two factors, however, indicate the need of more active residential construction with the return of more prosperous conditions. They are (1) obsolescence of present structures, and (2) the movement of population away from congested metropolitan areas and the need to provide new residences in suburban areas and in smaller cities.

The brick industry must also take cognizance of the fact that the trend is toward lower cost residences. With the decline of lumber supply becoming apparent, the opportunity for filling the low-cost house market is open to brick manufacturers if reduction in the cost of financing and constructing a house can be accomplished. No other material has been offered that has conclusively demonstrated the possibility of building a low-cost house although sheet-steel manufacturers have attempted to do so. Clay products such as light weight bricks, porous brick, nail block, brick panels, and brick veneer have been designed to meet the problem of lower cost but it is still too early to determine their usefulness and acceptability by the public. Clay products manufacturers cannot, however, afford to relax their efforts in finding a means for the practical solution of this problem.

The use of steel frame work, made either from rolled structural shapes or tubular pieces, welded into a frame, and enclosed with structural clay products seems to be gaining favor as a type of building possessing durability and absence of shrinkage and being proof against fire and against vermin accumulation. Cooperation between brick manufacturers and builders is essential in solving the structural problem in the design of a building of this type.

Activity in the design and testing of reinforced brick structures in 1931 and 1932 has demonstrated the practicalness and economy of this type of masonry for various kinds of construction. This opens for brick utilization a field which has hitherto been occupied by other materials and every effort should be made to present the merits of this type of construction to the building industry.

New materials which add to the comfort and cleanliness of a house such as insulating materials, glass or porcelain enamel for interior finishing, tile for flooring, and sound-proofing materials are receiving more critical attention than hitherto and their relation to structural clay products demands further study. The position that brick is to occupy in the building activities of the next decade will be affected to a considerable degree by foresight in anticipating the developments of the immediate future.

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Table 4. Shipments of common brick, face brick, and hollow building tile in Illinois in 1932

Month	COMMON BRICK			FACE BRICK			HOLLOW TILE		
	Plants reporting	Shipments (In thousands)	Stocks on hand at end of month (In thousands)	Plants reporting	Shipments (In thousands)	Stocks on hand at end of month (In thousands)	Plants reporting	Shipments (In thousands)	Stocks on hand at end of month (In thousands)
Jan.	34	3,455	106,293	19	2,043	44,126	16	3,386	73,284
Feb.	39	4,214	104,810	22	2,053	52,634	19	3,069	69,296
Mar.	37	3,702	101,744	20	2,410	48,576	17	2,614	71,094
Apr.	38	6,456	95,500	22	4,406	59,247	17	3,793	68,429
May	36	6,688	93,754	19	3,346	46,652	15	3,488	66,236
June	33	5,316	86,715	18	3,615	41,502	15	2,765	68,172
July	34	5,488	86,016	19	2,978	42,726	16	2,899	60,711
Aug.	34	5,639	83,166	19	3,146	41,244	15	2,978	52,254
Sept.	32	4,622	79,449	18	3,184	49,658	15	2,978	52,055
Oct.	33	5,224	77,477	18	3,163	41,258	15	1,795	56,206
Nov.	30	3,454	73,780	15	1,515	35,858	14	735	45,612
Dec.	32	2,194	69,778	17	774	40,028	14	499	45,282
Total		56,452						32,633	
1933									
Jan.	30	1,787	68,236	18	932	45,911	16	2,117	44,105

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